

National Children and Youth Fitness Study: Its Contribution to Our National Objectives

American children and adolescents are not developing the exercise and fitness skills that could help maintain their good health as adults, and as many as half may not be getting enough exercise to develop healthy cardiorespiratory systems. These were the findings of a 2-year nationwide study of 8,800 students in grades 5 through 12. The study was funded by the Public Health Service's Office of Disease Prevention and Health Promotion (ODPHP).

In releasing the study's results on October 16, 1984, Secretary of Health and Human Services Margaret M. Heckler stated, "This study should serve as a warning . . . but it can also serve us as a blueprint for achieving the exercise and fitness goals we seek for today's children and the generations to come."

Historical background of the study. Five of the exercise and fitness objectives in "Promoting Health/Preventing Disease: Objectives for the Nation" focus on children and youth (1). For 10- to 17-year-olds, the three behavioral objectives targeted for 1990 are that 60 percent will attend physical education classes daily, 70 percent will periodically have their fitness tested, and 90 percent will participate in physical activities that are appropriate for the maintenance of an effective cardiorespiratory system. The two other youth-related fitness 1990 objectives call for acquiring data to monitor patterns of participation in physical activity and to evaluate short- and long-term benefits of exercise.

ODPHP, the Public Health Service agency charged with coordinating and monitoring progress toward the achievement of the 1990 objectives, could not find data adequate to support these five objectives and therefore began to lay the groundwork for the National Children and Youth Fitness Study (NCYFS) with the encouragement of Congress. Panels of experts were convened by the agency to help design a battery of fitness tests and a survey of physical activities. The NCYFS began in the fall of 1982, and the panel recommendations were formally pilot tested in three States in May 1983. Data were collected from a national random sample of 10,275 students, from 140 public and private schools in 19 States, between February and May 1984. The 8,800 boys and girls who participated in the fitness testing and survey represented an 85.6 percent participation rate.

The study posed three general questions about the fitness and activity patterns of American children and youth:

- How fit are American boys and girls in grades 5 through 12?
- What are the physical activity patterns of children and youth in these grades?
- How do differences in physical activity patterns affect measured fitness?

Data collection procedures. The 8,800 participating students filled out survey questionnaires on the types, frequency, duration, and seasonality of exercise, sports, and active games they participated in through school physical education class, other school programs, and community organizations and in their homes or neighborhoods. Next, each student completed a battery of five measures drawn primarily from the Health Related Physical Fitness Test of the American Alliance for Health, Physical Education, Recreation, and Dance. Cardiorespiratory endurance was measured through the 1-mile walk-run, and lower back-hamstring flexibility, through the sit-and-reach test. Upper body strength-endurance was tested by chinups; and abdominal strength-endurance by bent-knee situps. Finally, body composition (degree of fatness) was assessed by measuring triceps and subscapular skinfolds. The table shows the average scores for boys and girls.

Participating teachers were trained in data collection procedures and testing techniques. To minimize the burden on teachers, field staff worked closely with school personnel until all data were collected. The skinfold measurements and the sit-and-reach test were conducted by the field staff. Mass-testing procedures were used to avoid disrupting school programs. Throughout the project, continuing efforts were made to ensure data quality.

Summary of key findings. Although the complete study results will be published in the January 1985 issue of *The Journal of Physical Education, Recreation, and Dance* (2), a brief synopsis of the major findings of the study follows.

- Body fat measurements were significantly higher in today's youth than in measurements taken by the National Center for Health Statistics in the 1960s.
- About 50 percent of today's youth do not engage in "appropriate physical activity."

Average scores for boys and girls by age on the National Children and Youth Fitness Tests

Measures and test	10 years	11 years	12 years	13 years	14 years	15 years	16 years	17 years	18 years
<i>Boys</i>									
Body fatness—sum of triceps and subscapular skinfolds (millimeters)	20.9	21.20	21.60	20.10	20.10	20.10	19.40	20.10	20.2
Flexibility—sit-and-reach (inches)	13.10	13.10	12.70	12.90	13.30	14.10	14.80	15.10	15.10
Abdominal strength—bent-knee situps (number in 60 seconds)	34.40	35.30	37.90	39.60	41.0	42.0	43.50	43.50	42.70
Upper body strength—chinups (number completed)	2.70	2.90	3.40	4.60	5.70	7.20	8.60	9.00	9.70
Cardiorespiratory endurance—mile walk-run (minutes and seconds)	10:20	9:50	9:24	8:41	8:40	8:00	7:44	8:20	8:10
<i>Girls</i>									
Body fatness—sum of triceps and subscapular skinfolds (millimeters)	22.60	24.80	25.30	26.80	27.90	30.00	28.70	30.20	28.90
Flexibility—sit-and-reach (inches)	14.40	14.80	15.50	16.10	16.40	17.00	17.50	17.20	17.10
Abdominal strength—bent-knee situps (number in 60 seconds)	31.40	31.60	33.70	33.60	34.80	34.60	35.10	35.10	35.40
Upper body strength—chinups (number completed)90	.80	.80	.60	.80	.60	.90	.70	.60
Cardiorespiratory endurance—mile walk-run (minutes and seconds)	11:38	11:52	11:32	11:05	10:42	11:14	11:03	11:00	11:20

- Approximately 80 percent of 5th through 12 graders take physical education classes. However, enrollment declines sharply, with 98 percent enrolled in 5th grade, but barely 50 percent in 12th grade.
- On the average, a student takes physical education classes only 3.6 days per week: only 36.3 percent of 5th–12th graders take daily classes.
- The average youth gets more than 80 percent of his or her physical activity outside of the school physical education program. A student spends an average of 12 to 13 hours per week in physical activity outside of class year-round, compared with 2 to 3 hours in class.
- In physical education classes, 47 percent of the time is spent on lifetime fitness skills, whereas 63 percent of activity time outside of physical education class is spent on lifetime activities. Lifetime activities generally require only one or two people and may readily be continued into adulthood.
- Physical education teachers of younger students tend to rely heavily on relays and informal games, such as dodgeball and kickball. Among older students, teachers continue to rely heavily on competitive sports and other activities that cannot readily be practiced by adults.
- For all those surveyed, the top five physical education class activities are basketball, calisthenics-exercises, volleyball, baseball or softball, and jogging (distance running).
- The top five activities outside of physical education classes for boys are bicycling, basketball, tackle football, baseball or softball, and swimming. For girls they are

swimming, bicycling, disco or popular dance, rollerskating, and walking quickly.

- Exercise patterns are highly seasonal. Activity in the winter and fall months falls to half that of the summer high. Youths have difficulty shifting activity from one season to the next or continuing activities despite change of season.
- Several factors stand out in producing highly fit youths (those above the 75th percentile on each of the physical fitness measures). These youths are enrolled in physical education, take classes more days per week than less fit youths, and participate in a greater variety of activities. In addition to physical education in school, they participate in physical activity through a larger number of community organizations, have a more varied activity program, and participate in more activities with lifetime fitness skills than others.

Implications of the fitness study. Although the results of the NCYFS will be used to help monitor fitness, evaluate programs, and assess existing school and community offerings, it is not infrequent that a study such as this one raises many questions. In the final analysis, the NCYFS raises many issues that must now be addressed. Among them are the following.

1. Are the changes in percentage of body fat the result of changes in diet, changes in exercise patterns, or some combination of these and other factors?

2. Given that today's youth have significantly higher percentages of body fat compared with the youth of 20 years ago, what is the impact of this increase on health status?
3. We know that in order to excel in academic settings, students must be healthy, alert, and fit. These characteristics allow students to concentrate on their classwork without the distractions of fatigue, illness, and discomfort. The problem that we face, however, during a "back to basics" movement in American education, is how to convince parents and school administrators alike that the skills acquired in health and physical education programs are also basic educational skills.

Though much has been accomplished in the National Children and Youth Fitness Study, the biggest challenges lie ahead. One priority is to duplicate the study on children in kindergarten through 4th grade. These youngsters often participate in physical activities without the advantage of professional guidance and support. Part of providing them with better guidance is obtaining baseline information for program planning purposes.

We must also do our best to make these data available for examination, subsequent analysis, and interpretation by members of professional physical education organizations, researchers, practitioners, school administrators, and parents. It is only after intense scrutiny of the data from a great many perspectives that studies like these can lead to enhanced fitness programs for American children and youth and the attainment of the 1990 objectives for exercise and fitness.

Edward N. Brandt, Jr., MD, PhD
Assistant Secretary for Health
and

J. Michael McGinnis, MD
Deputy Assistant Secretary for Health
(Disease Prevention and Health Promotion)

References

1. Department of Health and Human Services: Promoting health/preventing disease. Objectives for the nation. Public Health Service, Washington, D.C., fall 1980.
2. National Children and Youth Fitness Study. *Journal of Physical Education, Recreation and Dance*. Vol. 55. Insert in January 1985.

Community-Oriented Primary Care: a Promising Innovation in Primary Care

The rising costs of health care have focused increasing attention on methods to improve the cost effectiveness of care. Because the costs of care are centered largely in the procedure-oriented activities of both hospital and outpatient specialty care, a renewed interest has emerged in primary care as a strategy to improve health outcomes at less cost. Primary care may be an important locus where modern medical technological capabilities can be effectively used to fulfill the health care needs of the population.

A recent report by the Institute of Medicine (IOM) concluded that community-oriented primary care (COPC) may be an important variation of the primary care model (1); COPC can be characterized as the use of epidemiologic and clinical skills in a complementary fashion to tailor a primary care program to the particular health needs of a defined community. The principles of COPC can be incorporated in a variety of forms of medical practice that define a target population and systematically identify and address its major health problems.

An operational model of COPC was developed for the IOM study based on three elements—a primary care practice, a defined population, and a process to address the major health problems of the community. This process is iterative and consists of four discrete functional steps: (a) defining and characterizing the community, (b) identifying the community's health problems, (c) modifying the health care program to address priority problems, and (d) monitoring the effectiveness of the program modifications. The model does not constrain the manner in which the practitioners of the community are organized or the manner by which the cost of providing the primary care is met, directly or indirectly, by the patient or patient groups. Nonetheless, the model, as delineated, does preclude defining a community simply as the collectivity of a physician's active patients, even though applying the COPC process to an active patient population might promote excellent primary care.

While COPC clearly is not the prevailing mode of primary care practice in the United States, the IOM report includes seven case studies in which the major elements of the COPC model were in place. Of particular importance is the presence of elements of COPC in practice settings with different organizational structures and mechanisms of financing. It appears that COPC is not by nature limited to publicly funded programs that address underserved populations; it can find expression